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Illinois appointed Mr. Walsh Acting State Entomologist, and that gentleman has published his first report on the Injurious Insects of Illinois, containing facts of great value to the farmers and gardeners of the West. Mr. Riley has been appointed State Entomologist of Missouri, and it is not yet time for his report to appear. Entomologists residing in other states, have at various times, published entomological articles in the yearly State Agricultural Reports. But the public are beginning to realize that the results of the labors of scientific men, freely given for the good of the country, deserve, and should receive, some remuneration. A pittance given from the public treasury to aid in the researches of the naturalist, the chemist, or the physicist, we venture to say, will prove, sooner or later, a safe investment.

Our readers will find the present number of the "American Entomologist" a very readable one, and we advise them to send for it. Mr. Walsh believes that the Seventeen-year Locust never stings, in which opinion we concur, but he farther suggests that the severe sting said to be made by this, to man, harmless insect, is made by the great *Stizus*, a burrowing wasp, which stings and paralyses the locust with which it provisions its nest, and might sting any person "that stands in their way." He also relates the interesting habits of *Anthophora sponsa*, a solitary Mason-bee; the habits of any species of this genus not having before been observed in this country. The Plum Curculio is said by Mr. Hull to attack the peach-tree, making the well-known crescent-cut in the bark, in which their eggs are deposited in June. They also sting the peaches, but the larvæ growing from the eggs die, the peach withering when falling on naked ploughed land. Mr. Walsh verifies these statements, and gives us an account of the Hull "Curculio-catcher." An account, well illustrated, of a new Bark-louse on the Osage orange, with notes on the Cotton-worm of the South, Grasshoppers, Fire-flies, etc., etc., and Answers to Correspondents closes this promising number.

NATURAL HISTORY MISCELLANY.

BOTANY.

Cross Fertilization.—A plant has just blossomed in the Cambridge Botanical Garden, which shows so plainly a design to effect cross-fertilization, that a brief account of it cannot fail to be interesting.

It is a *Posoqueria*—one of the immense natural order of Rubiaceæ; a native probably of Central or South America: the particular locality whence our plant came being unknown. This individual is a shrub about two feet high, and the flowers, in a cluster at the tips of the branches, are white (or the tube towards the base greenish) and about five inches long, terminated by a five-parted border less than two inches across. The tube is slender, and around its mouth is a finely-cut fringe of the same color and texture as the border itself, and on its inside are scattering hair-like glands. The flowers are horizontal or slightly drooping, and are very sweet-scented; nor do they thus attract insects without having already prepared a store of honey to reward them for their visits. But the entrance to the tube *seems* guarded. Before the flower opened, the upper part, or limb, or border, was about egg-shaped and bent somewhat downwards. After expansion, the anthers are seen cohering in a mass, nearly opposite the mouth of the tube. The five filaments which support the anthers are of unequal length; the upper lateral — as I propose to call them — being sensibly longer than the lowermost and the lower-lateral pair. Hence, so long as the anthers cohere, the longer filaments must be curved. If they had bent directly forwards, they would nearly or quite cover the orifice of the tube; but they curve laterally and downwards, thus leaving it open. The filaments are very elastic, or, better perhaps, have a strongly contractile tissue on their inner surface, or an expansive one on the outer. The flower is very sweet-scented, and has honey at the bottom. But it is so far away that no insect but such as has a very long sucker can reach it. A large crepuscular moth can do it, perhaps. These moths fly swiftly — with force enough to touch' off the spring gun set for them. A light pressure on the tip of the anther-mass causes it to fly apart, scattering the pollen all about, and to a considerable distance. The explosion is caused by the elasticity of the filaments above described, and the object is plainly to deposit the pollen on the breast of the insect, that it may be conveyed to other flowers. In the explosion the lower filament has sprung upwards and now lies close over the mouth of the tube, while the other four are bent sideways, the anthers of each pair still cohering. The insect, even if not scared at such trifles as the shot which greets him, can now no longer continue his feast, but goes away, with his breast bepowdered, to another flower, on whose stigma some of the powder is deposited.

But now we are met by a difficulty. We do not know if there exists a flower whose stigma projects outside of it. We *do* know that the stigma of the flower which shot him is nearly half-way to the bottom of it, inside the tube. Perhaps some of the pollen is on his sucker and may thus be borne to the stigma.

It is well known that this family of plants has many species which are dimorphous, as we call them; some flowers having long stamens and short or imperfect styles, others having long styles and short or imperfect stamens. These last generally produce all the good seeds; or at least more or better seeds than the former. Such is probably the case here; but, as I said, we do not know that it is so. In the native country of our plant there may be others with long styles. If, however, the style is always so short, we may still believe that a portion of the pollen (and it seems to need but little) is conveyed by the sucker of the moth to some other flower, and thus the seeds become perfected. But if the lower stamen remained in the position it assumed at the time of the explosion, no insect could thrust its proboscis down the tube. So, after a time, the stamen rises and bends gradually back to its original position, leaving free access to insects ever afterwards.

We have an account of a plant whose flower looks, in every particular, like ours, and whose action is the same, except that the separation of the anthers was not produced by pressure on their tips, but by the irritation of the filaments near them.

In the twenty-fourth volume of the Botanische Zeitung, for the year 1866, on pages 129 and following, is a narration, by Fritz Müller, of numerous and varied experiments made by him on a plant, which he calls *Martha fragrans*, found on the island Santa Catarina, near the Brazilian coast, at a place called Desterro. He gives a figure of the flower, and if he had made it from one of ours, he could not have made it more like them; only that he makes no mention of the hairs on the inside, and he says the stigma is twisted, which was not the case in our plant. According to his observations, the lower and lower-lateral filaments could be rudely handled without effect; yet the lightest touch on the inner curvature of the upper filaments near the anthers produced an immediate explosion. Unfortunately all our flowers but one had fallen before my attention was drawn to Mr. Müller's account; and, even then, by a misunderstanding in reading German, in which I am not proficient, I mistook the precise spot where, according to him, the sensitiveness resides. I tickled faithfully, however, the filaments towards their base, without any satisfactory result.

Mr. Müller gives his views briefly thus: A moth, on thrusting its proboscis into the tube of the flower, will very surely touch one of the filaments and produce a discharge of the pollen. It will then go to another flower and convey some of the pollen to its stigma. And he, as it seems, did not *know* whether or not there are flowers with a projecting stigma.

His account and explanation are not quite satisfactory. It seems difficult to believe that in his plants the very simple mechanical mode of explosion could have existed and have escaped his observation. It seems equally difficult to believe that the two plants are not identical. There are, besides, objections to his view. There is nothing to prevent an ant, or a fly, or any other small insect, from causing a useless discharge of the pollen, according to his view and experiments, whereas it is quite plain that such small insects could never convey the pollen to the stigma, if, as in our plant, and apparently in those experimented on by him, it is deep within the tube. There is also another objection to his view. The curvature of the upper filaments form a circle of much larger diameter than the mouth of the tube, so that, it appears to me, it would be the merest accident that the sucker of the moth should touch a filament unless he swayed very much to one side. According to the experiments made here, the moth—a swift-flying heavy insect—comes to the flower with momentum more than sufficient to cause the discharge of the pollen upon himself. In the other view, the influence, whatever it may be, must be conveyed along the filament to the anther; and, *how* it produces its effect there is equally mysterious. Mr. Müller did not ascertain by what means the anthers are made to cohere. However it may be, a simple mechanical force in the case of our plant sufficed to break up the cohesion; and I can hardly doubt that the true solution is the same in the case of Mr. Müller's plants, and that it was by the merest accident that he did not discover it.

These remarks, it is hoped, will serve to direct attention to the plant in future. It is quite likely it may exist in other gardens in this country, and, if not, there can hardly fail to be specimens of it in European conservatories.—CHARLES WRIGHT.

THE ONION PLANT, so called, is a singular bulb cultivated for the graceful habit of its long sheathing leaves tapering to a narrow point. It is the *Ornithogalum alliaceum* of the gardens, and employed to decorate pedestals in artistical collections of plants; the bulb is of a lively green color and grows upon the surface of the earth, sustained in an erect position by its fibrous roots only. A specimen has lately blossomed in this city, throwing up a spike of small greenish white flowers, at the top of a cylindrical stem of three feet in length. The magnifying glass, when applied to the flower, reveals its real beauty, every part of which is of a crystalline vesicular appearance. Similar to it, but blossoming when destitute of leaves, is the *Scilla maritima*, which, after more than two years careful cultivation, suddenly threw up a tall green stem supporting numerous small white flowers, the petals of which are completely recurved or bent backwards, the flowers in little clusters. It was brought to Salem from some part of Africa, and has been cultivated by F. Putnam, in his conservatory on Crombie street.

Some large fine looking bulbs of *Pancratium Illyricum?* have been liberally distributed by sale, at an extraordinarily low price per bulb. It is a native of the South of France and Spain; the flowers are white, handsome, and very fragrant.—J. L. R., *Salem.*

THE SMALLEST FLOWERING-PLANT KNOWN.—Two weeks ago, returning from the Catskill Mountain House, I saw by the roadside, a mile west of Catskill Village, a pool completely *covered* with WOLFFIA. I hastily seized a newspaper (the only means of conveyance at hand), covered the sides with the minute grains, and keeping the paper wet, safely deposited it in my aquarium. This day (August 22d) I find it splendidly in *bloom,* the little white points dotting my aquarium. This is noteworthy, as being the first found in flower in this country, of this, the smallest flowering-plant known.

P. S.—At the same time are in bloom in my aquarium, *Lemna minor, L. perpusilla,* and *L. minor* var. *purpurea,* whose flowers differ so much from *L. minor,* that Mr. Leggett, who gave me these, will propose it as a distinct species.—T. F. ALLEN, M. D., *New York.*

Planera aquatica, the Planer-tree. — Botanists of the South and South-west would confer a favor and benefit, if they would send to Professor Gray, of Cambridge, good specimens, in flower and fruit, of this rare tree; also, a stock of the fresh ripe fruit from which the tree may be raised. There are very few good specimens extant in the principal herbaria, and the tree is nearly or quite lost from cultivation, so far as we can learn, both in Europe and in this country. The monographer of the *Ulmacea*, for DeCandolles' Prodromus, particularly needs specimens at an early date. — A. Gray.

Viola rotundifolia. — This plant was found in bloom April 23, in the vicinity of New Bedford, growing in mossy hummocks, in a rather dry, open place. The plant must be rare near the coast in this latitude, as it is not given in any of the local catalogues (Bigelow, Irving, Olney, Hitchcock, etc.) as occurring so near it. — H. W.

ZOÖLOGY.

Hatching the Cotalpa lanigera. — Up to the time of writing the article on page 186 of the Naturalist, we had not succeeded in getting the eggs of the Goldsmith Beetle. On the evening of the 13th June last, we caught in the drug-store, Keyport, whither they were attracted by the profusion of light, four Cotalpas, representing both sexes. These were taken home and well cared for. On the 16th a pair coupled. A jar of earth was at once provided, and the beetles placed on top of the dirt. In the evening the female burrowed and disappeared. Near midnight, she had not returned to the surface; next morning she had reappeared. The earth was then very carefully taken from the jar, and, as removed, was inspected with a glass of wide field but low power. Fourteen eggs were found; not laid (as we expected) in one spot, or group, but singly, and at different depths. I was surprised at their great size. Laid lengthwise, end touching end, two eggs measured very nearly $\frac{3}{16}$ of an inch. They were like white wax, semi-translucent; in form, long-ovoid, and perfectly symmetrical. On the 13th of July one had hatched; the grub was well formed and very lively. Its dimensions were about $\frac{5}{16}$ of an inch in length, and about $\frac{3}{30}$ of an inch in thickness. It was a dull white, the head-plate precisely that dull yellow seen in the adult grub, the legs the same color, and the extremity of the abdomen, lead-color, the skin being transparent. For food, a sod of white clover (*trifolium repens*) was given them, roots downward, knowing that the young larvæ would come upward to eat. They were then left undisturbed until August 19th, when the sod was removed, and it was found that the grubs had eaten into it, thus making little oval chambers, which were enlarged as the eating went on. They were carefully picked out, and a fresh sod of clover and grass supplied. They had now grown $\frac{5}{8}$ of an inch in length, preserving the same colors.

It is quite possible that a few of the eggs escaped me in the search. I